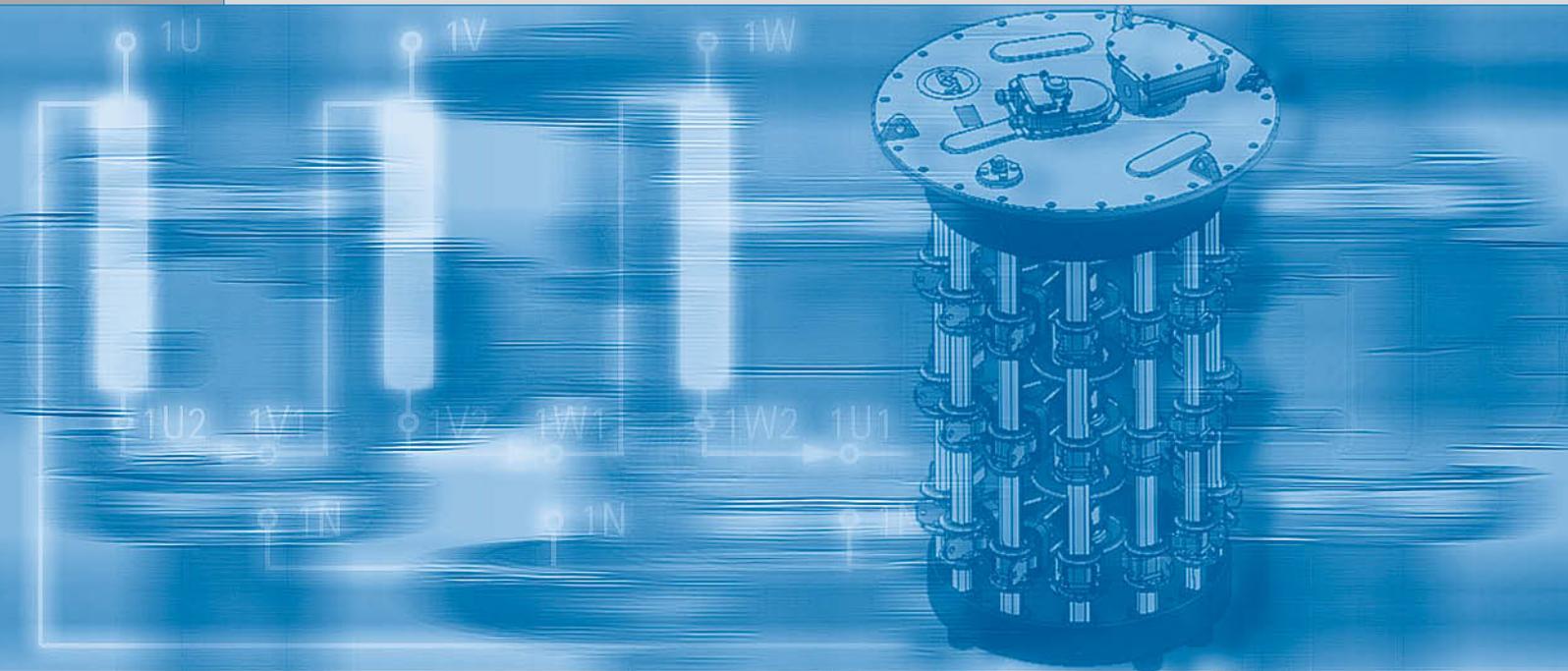


# DEETAP® DU

Off-circuit Tap-changer

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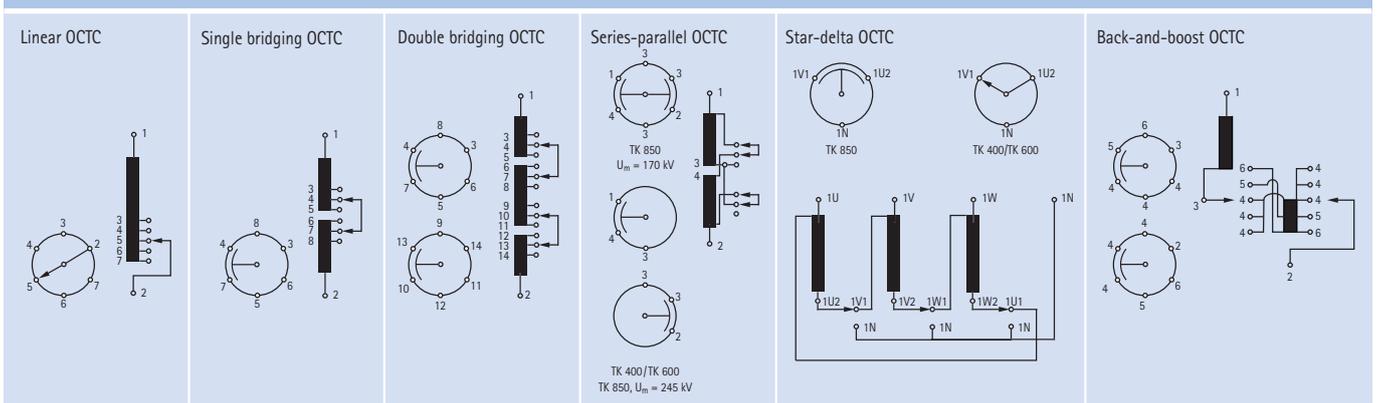
## DEETAP® DU off-circuit tap-changer

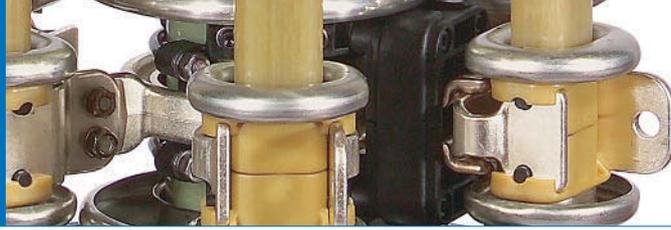


- Design according to IEC 60214-1 (valid since 2003).
- Single- and three-phase off-circuit tap-changers for up to 2000 A rated through-current as standard. Higher values possible as special design.
- Rated insulation level up to  $V_m = 245$  kV as standard.
- Higher values possible as special design.
- High safety through release/interlocking contact.
- Compact, most robust and intelligent design:
  - Tube and bar material made from glass fibre reinforced plastic (GRP)
  - Modular concept
  - Optimized field design through smooth surfaces, soft edges and use of innovative materials
- Straightforward installation in the transformer tank.
- Possible drive types:
  - Hexagon shaft with switch key
  - Handwheel
  - Manual drive
  - Motor drive

Off-circuit tap-changer DEETAP® DU

### Off-circuit tap-changer, basic connection types





## Technical data

In view of the wide range of possible off-circuit tap-changer configurations only limited technical data can be provided. Please contact us for further information, if required. A more detailed compilation of technical data and other information for selecting DEETAP® DU off-circuit tap-changer can be found in our document 266/04.

### Off-circuit tap-changer with contact circle diameter 400 mm / 600 mm

Off-circuit tap-changer type DEETAP® DU I/ DU III	Standard types									
	200	400	600	800	1000	1222	1202	1622	1602	2022
Number of phases	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
Max. rated through-current $I_{um}$ (in A) <sup>1)</sup>	200	400	600	800	1000	1200	1200	1600	1600	2000
Rated short-time current (in kA)	4	6	8	10	12	16	20	20	25	25
Rated short-circuit duration (in s)	3	3	3	3	3	3	3	3	3	3
Rated short-circuit current (in kA)	10	15	20	25	30	40	50	50	63	63
Operating positions Contact circle diameter 400 mm 600 mm	max. 5 max. 11									
Off-circuit tap-changer, basic connection types	Star point linear off-circuit tap-changer <sup>2)</sup> Linear off-circuit tap-changer for delta connection Single bridging off-circuit tap-changer Double bridging off-circuit tap-changer Series-parallel off-circuit tap-changer <sup>3)</sup> Star-delta off-circuit tap-changer									
Rated frequency (in Hz)	50 ... 60									
Rated insulation level Maximum equipment voltage $V_m$ <sup>4)</sup> (in kV)	36    72.5    123    145    170    245 <sup>5)</sup>									
Rated lightning impulse voltage (in kV, 1.2150) <sup>6)</sup>	200    350    550    650    750    1050									
Rated switching impulse voltage <sup>6)</sup> (in kV)	850									
Rated power-frequency withstand voltage (in kV, 50 Hz, 1 min)	80    140 <sup>6)</sup> 230 <sup>6)</sup> 275 <sup>6)</sup> 325 <sup>6)</sup> 460 <sup>6)</sup>									
Rated withstand voltages of the internal insulation	See section 3.3 in document 266/04									
Weight (in kg)	Contact circle dia. 400 mm: max. 180 kg, contact circle dia. 600 mm: max. 255 kg									
Drive	Handwheel or hexagon shaft with switch key TAPMOTION® DD manual drive, TAPMOTION® ED motor drive unit									
Safety devices	Electrical locking through cam-operated switch; tap-change operation after approx. 1/12 travel Contacts: 1 n/c and n/o contact with common change points AC switching capacity: 250 V, 8 A									

<sup>1)</sup> Max. rated through-currents over 2000 A possible, see section Special types and Section 4.1 in document 266/04.

<sup>2)</sup> Single-phase types for Y applications are declared as D type.

<sup>3)</sup> The max. rated through-current is based on series connection.

<sup>4)</sup> According to IEC 60214-1, Section 3.57: RMS value of the conductor-conductor voltage for which a component is dimensioned in terms of its insulation.

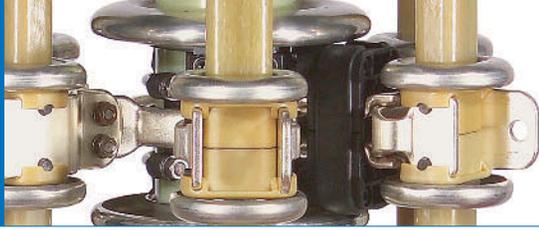
<sup>5)</sup> Off-circuit tap-changer type DU for insulation to ground  $V_m > 245$  kV see section Special types and Section 4.2 in document 266/04.

<sup>6)</sup> In order to accommodate the voltages occurring at the "free-running winding parts", voltages above the standardized rated insulation level are permitted for the off-circuit tap-changer type D (linear off-circuit tap-changer for delta connection).

Rated lightning impulse voltage: +20%

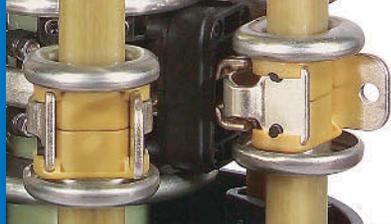
Rated switching impulse voltage: +10%

Rated power-frequency withstand voltage: +10%



**Off-circuit tap-changer with contact circle diameter 400 mm and 600 mm**

Off-circuit tap-changer type DEETAP® DU I/ DU III	Special types							
	422	822	2003	2403	3033	3204	4044	4005
Number of phases	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1
Max. rated through-current $I_{um}$ (in A) <sup>1)</sup>	400	800	2000	2400	3000	3200	4000	4000
Rated short-time current (in kA)	6	10	25	30	30	32	32	40
Rated short-circuit duration (in s)	3	3	3	3	3	3	3	3
Rated short-circuit current (in kA)	15	25	63	75	75	80	80	100
Operating positions Contact circle diameter 400 mm 600 mm	max. 5 max. 11							
Off-circuit tap-changer, basic connection types	Star point linear off-circuit tap-changer <sup>2)</sup> Linear off-circuit tap-changer for delta connection Single bridging off-circuit tap-changer Double bridging off-circuit tap-changer Series-parallel off-circuit tap-changer <sup>3)</sup> Star-delta off-circuit tap-changer Back-and-Boost-Umsteller (Wender-Umsteller) Switch for special applications							
Rated frequency (in Hz)	50 ... 60							
Rated insulation level Maximum equipment voltage $V_m$ <sup>4)</sup> (in kV)	300   362   420   550							
Rated lightning impulse voltage (in kV, 1.2/50) <sup>6)</sup>	1050   1175   1550   1675							
Rated switching impulse voltage <sup>6)</sup> (in kV)	850   950   1175   1300							
Rated power-frequency withstand voltage (in kV, 50 Hz, 1 min)	460 <sup>6)</sup>   510 <sup>6)</sup>   630 <sup>6)</sup>   680 <sup>6)</sup>							
Rated withstand voltages of the internal insulation	See section 3.3 in document 266/04							
Weight (in kg)	Contact circle dia. 400 mm: max. 220 kg, contact circle dia. 600 mm: max. 290 kg							
Drive	Handwheel or hexagon shaft with switch key TAPMOTION® DD manual drive, TAPMOTION® ED motor drive unit							
Safety devices	Electrical locking through cam-operated switch; tap-change operation after approx. 1/12 travel Contacts: 1 n/c and n/o contact with common change points AC switching capacity: 250 V, 8 A							



### Off-circuit tap-changer with contact circle diameter 850 mm

Off-circuit tap-changer type DEETAP® DU I/ DU III	Standard types			Special types	
	1000	1602		2403	3204
Number of phases	1/3	1/3		1/3	1/3
Max. rated through-current $I_{um}$ (in A) <sup>1)</sup>	1000	1600		2400	3200
Rated short-time current (in kA)	10	16		24	32
Rated short-circuit duration (in s)	3	3		3	3
Rated short-circuit current (in kA)	25	40		60	80
Operating positions Contact circle diameter 850 mm	max. 17				
Off-circuit tap-changer, basic connection types	<p><b>Standard basic connection types</b>            Star point linear off-circuit tap-changer <sup>2)</sup>            Linear off-circuit tap-changer for delta connection            Single bridging off-circuit tap-changer            Double bridging off-circuit tap-changer            Series-parallel off-circuit tap-changer <sup>3)</sup>            Star-delta off-circuit tap-changer</p> <p><b>Special basic connection types</b>            Back-and-Boost-Umsteller (Wender-Umsteller)            Switch for special applications</p>				
Rated frequency (in Hz)	50 ... 60				
Rated insulation level Maximum equipment voltage $V_m$ <sup>4)</sup> (in kV)	72,5	170	245 <sup>5)</sup>	300	362
Rated lightning impulse voltage (in kV, 1.2/50) <sup>6)</sup>	350	750	1050	1050	1175
Rated switching impulse voltage <sup>6)</sup> (in kV)			850	850	950
Rated power-frequency withstand voltage (in kV, 50 Hz, 1 min) <sup>6)</sup>	140	325	460	460	510
Rated withstand voltages of the internal insulation	See section 3.3 in document 266/04				
Weight (in kg)	Contact circle dia. 850 mm: max. 420 kg			Contact circle dia. 850 mm: max. 500 kg	
Drive	Handwheel or hexagon shaft with switch key TAPMOTION® DD manual drive, TAPMOTION® ED motor drive unit				
Safety devices	Electrical locking through cam-operated switch; tap-change operation after approx. 1/12 travel Contacts: 1 n/c and n/o contact with common change points AC switching capacity: 250 V, 8 A				

<sup>1)</sup> Max. rated through-currents over 1600 A possible, see section Special types and Section 4.1 in document 266/04.

<sup>2)</sup> Single-phase types for Y applications are declared as D type.

<sup>3)</sup> The max. rated through-current is based on series connection.

<sup>4)</sup> According to IEC 60214-1, Section 3.57: RMS value of the conductor-conductor voltage for which a component is dimensioned in terms of its insulation.

<sup>5)</sup> Off-circuit tap-changer type DU for insulation to ground  $V_m > 245$  kV see section Special types and Section 4.2 in document 266/04.

<sup>6)</sup> In order to accommodate the voltages occurring at the "free-running winding parts", voltages above the standardized rated insulation level are permitted for the off-circuit tap-changer type D (linear off-circuit tap-changer for delta connection).

Rated lightning impulse voltage: +20%; Rated switching impulse voltage: +10%; Rated power-frequency withstand voltage: +10%

